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**APPLICATION
FOR
UNITED STATES LETTERS PATENT**

**TITLE: IMAGE REPRODUCTION DEVICE AND
IMAGE REPRODUCTION METHOD**

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CLAIMS

1. An image reproduction device which displays an image file storage medium having stored therein a plurality 5 of image files with main image information and thumbnail image information in an arbitrary format, and an automatic reproduction file containing at least the description as to whether the automatic reproduction of said plurality of the image files is permitted or not and order in which said 10 image files are reproduced, the device comprising:

a read unit which reads each file information stored in said image file storage medium;

a control unit which performs a control operation in such a manner that said read unit reads from said image 15 file storage medium a thumbnail image of the image file which contains the description of automatic reproduction in the automatic reproduction file;

an image development unit which develops the image file read by said read unit;

20 a storage element into which the image data developed by said image development unit are written; and

an image display unit which reads and displays a list of the thumbnail images written in said storage element.

25 2. An image reproduction device according to claim 1,

further comprising:

an input unit which selectively determines whether
only the thumbnail image of the image file which contains
the description of automatic reproduction in said automatic
reproduction file read by said read unit is displayed or
5 the thumbnail images of all the image files stored in said
image file storage medium are displayed regardless of the
automatic reproduction information of said automatic
reproduction file, wherein
10 said control unit performs the control operation in
such a manner that the thumbnail image selected by said
input unit is read from said image file storage medium.

3. An image reproduction device according to claim 1,
15 wherein

said storage element holds dummy image data
corresponding to a thumbnail image, and
said control unit performs the control operation in
such a manner that a dummy image is read from said storage
20 element in place of the thumbnail image of the image file
which contains the description of non-automatic
reproduction in said automatic reproduction file read by
said read unit.

25 4. An image reproduction device according to claim 3,

further comprising:

an input unit which selectively determines whether said thumbnail image is displayed as a dummy image or as a thumbnail image, wherein

5 said control unit performs the control operation in such a manner that a thumbnail image is read from said image file storage medium in a case where the thumbnail image is selected by said input unit, and a dummy image is read from said storage element in a case where the dummy image is selected by said input unit.

10 5. An image reproduction device according to claim 1, wherein

said image development unit develops the thumbnail image of the image file which contains the description of automatic reproduction in the automatic reproduction file read by said read unit as a normal image and, also, develops a thumbnail image of the image file which contains the description of non-automatic reproduction in said automatic reproduction file as an image difficult to recognize.

20 6. An image reproduction device according to claim 5, wherein

25 said image development unit comprises:

a file extension unit which is supplied with the image file information stored in said image file storage medium to extend the image file;

- 5 a write address generating unit which generates a
write address for said storage element; and
a read address generating unit which generates a read
address for said storage element, and
when developing the thumbnail image of the image file
which contains the description of non-automatic
10 reproduction in the information of said automatic
reproduction file, the write address for said storage
element is generated discontinuously in accordance with a
predetermined rule by said write address generating unit.

- 15 7. An image reproduction device according to claim 5,
wherein

said image development unit comprises:
a file extension unit which is supplied with the image file information stored in said image file storage medium to extend the image file;
a write address generating unit which generates a write address for said storage element; and
a read address generating unit which generates a read address for said storage element, and
when developing the thumbnail image of the image file

which contains the description of non-automatic reproduction in the information of said automatic reproduction file, the read address for said storage element is generated discontinuously in accordance with a 5 predetermined rule by said read address generating unit.

8. An image reproduction device according to claim 5, wherein

said image development unit comprises:

10 a file extension unit which is supplied with the image file information stored in said image file storage medium to extend the image file;

a write address generating unit which generates a write address for said storage element; and

15 a read address generating unit which generates a read address for said storage element, and

when developing the thumbnail image of the image file which contains the description of non-automatic reproduction in the information of said automatic

20 reproduction file, the write address for said storage element is generated discontinuously in accordance with a predetermined rule by said write address generating unit and, also, the read address for said storage element is generated discontinuously in accordance with a

25 predetermined rule by said read address generating unit.

9. An image reproduction device according to claim 1,
wherein

 said storage element holds first and second different
5 dummy image data corresponding to a thumbnail image, and
 said control unit performs a control operation in
such a manner that the first dummy image is read from said
storage element in place of the thumbnail image of the
image file which contains the description of non-automatic
10 reproduction in the automatic reproduction file and, in a
case where a thumbnail image of the image file which
contains the description of automatic reproduction in the
information of said automatic reproduction file is not
stored in said image file, said control units performs a
15 control operation in such a manner that said second dummy
image is read from said storage element.

10. An image reproduction device according to claim
9, wherein

20 said control unit performs a control operation in
such a manner that after all the thumbnail images are
output on an arbitrary screen, a main image of the image
file having said thumbnail image not stored therein is read,
and size of said main image is reduced to that of a
25 thumbnail image, after which the image displayed as said

second dummy image is replaced with said compressed thumbnail image.

11. An image reproduction device according to claim
5 5, further comprising:

an input unit which selectively determines whether display of a thumbnail image displayed as said image difficult to recognize is canceled or not, wherein said control unit performs the control operation in such a manner that in a case where display of an image developed by said input unit as an image difficult to recognize is canceled, a thumbnail image corresponding to the image is read from said image file.

15 12. An image reproduction device according to claim
9, further comprising:

an input unit which selectively determines whether display of said first dummy image of the thumbnail image displayed as said first dummy image is canceled or not,

20 wherein
said control unit performs the control operation in such a manner that in a case where display of said dummy image is canceled by said input unit, a thumbnail image corresponding to the image is read from said image file.

13. An image reproduction device according to claim
1, further comprising:

an input unit which inputs directions in which an ODS cursor displayed on the display of said image display unit
5 is moved;

an OSD generating unit which displays an arbitrary OSD cursor on said display based on information input by said input unit; and

an image superposition unit which superposes an image
10 data read from said storage element to said image development unit on image information from said OSD generating unit to outputting the superposed image to said image display unit.

15 14. An image reproduction method which displays a thumbnail image of an image file storage medium having stored therein a plurality of image files and thumbnail image information in an arbitrary format, and an automatic reproduction file containing at least description of
20 control information as to whether automatic reproduction of said plurality of the image files is permitted or not and order in which said image files are reproduced, comprising the steps of:

reading said automatic reproduction file information
25 stored in said image file storage medium;

reading a thumbnail image information file of the image file which contains the description of automatic reproduction in said automatic reproduction file, from said image file storage medium; and

5 displaying a list of said thumbnail images that have been read.

15. An image reproduction method according to claim 14, comprising:

10 after reading said automatic reproduction file information stored in said image file storage medium, waiting an input for selectively determining whether only the thumbnail image of said image file which contains the description of automatic reproduction in said automatic reproduction file is displayed or the thumbnail images of all the image files stored in said image file storage medium are displayed regardless of said automatic reproduction file information; and

15 reading the thumbnail image selected from said image file storage medium.

20 16. An image reproduction method according to claim 14, comprising:

displaying the image file with the description of 25 non-automatic reproduction in said automatic reproduction

file as a dummy image in place of the thumbnail image.

17. An image reproduction method according to claim
16, comprising:

5 waiting an input for selectively determining whether
said thumbnail image is displayed as a dummy image or a
thumbnail image; and

 displaying the selected thumbnail image.

10 18. An image reproduction method according to claim
14, comprising:

displaying a thumbnail image of an image file which
contains the description of automatic reproduction in said
automatic reproduction file as a thumbnail image as it is;
15 and

developing a thumbnail image of an image file which
contains the description of non-automatic reproduction in
said automatic reproduction file as an image difficult to
recognize and displaying the thumbnail image.

20

19. An image reproduction method according to claim
18, wherein

said developing step comprises:
extending an image file in response to an input of
25 said image file information stored in said image file

storage medium;

when displaying the thumbnail image of the image file which contains the description of non-automatic reproduction in said automatic reproduction file stored in
5 said image file storage medium, generating a write address discontinuously in accordance with a predetermined rule for a storage element into which the extended image data is written; and

generating a read address sequentially when reading
10 the image data written in said storage element.

20. An image reproduction method according to claim
18, wherein

said developing step comprises:
15 extending an image file in response to an input of said image file information stored in said image file storage medium;

generating the write address to said storage element sequentially; and

20 when displaying a thumbnail image of an image file which contains the description of non-automatic reproduction in the information of said automatic reproduction file stored in said image file storage medium, generating a read address for reading the image data
25 written in said storage element discontinuously in

accordance with a predetermined rule.

21. An image reproduction method according to claim
18, wherein

5 said developing step comprises:

extending an image file in response to an input of
said image file information stored in said image file
storage medium;

when displaying a thumbnail image of an image file
10 which contains the description of non-automatic
reproduction in the information of said automatic
reproduction file stored in said image file storage medium,
generating a write address for the storage element into
which the extended image data is written discontinuously in
15 accordance with a predetermined rule; and

generating a read address for reading the image data
written in said storage element discontinuously in
accordance with a predetermined rule.

20 22. An image reproduction method according to claim
14, comprising:

displaying a thumbnail image of an image file which
contains the description of non-automatic reproduction in
said automatic reproduction file as a first dummy image;

25 and

in a case where a thumbnail image of an image file
which contains the description of automatic reproduction in
said automatic reproduction file is not stored in said
image file, displaying said thumbnail image as a second
5 dummy image different from the first dummy image.

23. An image reproduction method according to claim
22, comprising:

10 outputting all the thumbnail images on an arbitrary
screen;

reading a main image of an image file having no
thumbnail images therein; and

15 after minimizing a size of said main image to a size
of said thumbnail image, replacing the image displayed as
said second dummy image with said compressed thumbnail
image.

24. An image reproduction method according to claim
18, comprising:

20 waiting an input for selectively determining whether
the display of said thumbnail image displayed as an image
difficult to recognize is canceled or not; and

when canceling the display of said image as an image
difficult to recognize, replacing the thumbnail image
25 corresponding to the image with a thumbnail image which is

originally stored in said image file.

25. An image reproduction method according to claim
22, comprising:

5 waiting an input for selectively determining whether
the display of said first dummy of the thumbnail image
displayed as said first dummy image is canceled or not; and
when canceling the display as a dummy image,
replacing the thumbnail image corresponding to the
10 particular image with a thumbnail image which is originally
stored in said image file.

26. An image reproduction method according to claim
14, comprising:

15 inputting directions in which a OSD cursor displayed
on an arbitrary display is moved;
generating image data for displaying an arbitrary OSD
cursor on said display based on the input information; and
superposing said image data that has been read on
20 said image data from said OSD generating unit and
displaying the superposed data.